

HELMINTH PARASITES OF FISHES FROM THE ARABIAN GULF

4. ON *ALLACANTHOCHASMUS LUTJANI* N.SP. AND *METADENA LEILAE* NAGATY, 1957 (DIGENEA: CRYPTOGONIMIDAE)

By

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ABSTRACT

Allacanthochoasmus lutjani n.sp. is described from *Lutjanus fulviflamma* caught from Qatari waters in the Arabian Gulf. It differs from other species of the genus, mainly by the shape and position of the ovary, presence of oesophagus as well as two distinct processes on the gonotyle. *Metadena leilae* Nagaty, 1957 is reported for the first time outside its type locality, the Red Sea. It is redescribed from the same species of fish and its distinctive specific characters are discussed.

INTRODUCTION

The genus *Allacanthochoasmus* was established by Van Cleave (1922), with *A. varius* as the type species. Van Cleave and Mueller (1932) described another species; *A. artus* which differed from *A. varius* in body shape, number of ovarian follicles and the more specialized gonotyle.

Linton (1910) erected the genus *Metadena* with *M. crussulata* as the type species. Nagaty (1957) described *M. leilae* in *Lethrinus rostratus* from the Red Sea.

During an investigation on the helminth parasites of fishes from the Arabian Gulf, certain digenetic trematodes were collected from *Lutjanus fulviflamma* locally called 'Naiser'. These trematodes which belong to *Allacanthochoasmus* and *Metadena* are described herein.

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MATERIAL AND METHODS

The collection and identification of fish are described elsewhere (Saoud, Ramadan and Al Kawari, 1986). The methods and techniques of collection, relaxation fixation and staining of helminths are basically those described by Saoud and Ramadan (1983). Drawings were made to scale using a Camera Lucida. All measurements are in millimetres unless stated otherwise.

ALLACANTHOCHASMUS LUTJANI N.SP.

(Figs. 1-3)

DESCRIPTION

This description is based on three mature specimens from the stomach and intestine of *Lutjanus fulviflamma*.

The body is oval, spined, measuring 1.02 - 1.20 long and 0.51 - 0.71 wide. The length to width ratio varies from 1.6 - 2.1: 1. The oral sucker is cone-shaped. The mouth is surrounded by a crown of 22-26 spines. The spines are 39-42 μm long and 7-10 μm wide. The shape and number of these spines are shown in the scanning electron photomicrographs (Fig. 2). The oral sucker is 0.14 - 0.19 long and 0.17 - 0.18 at the widest part. A very short prepharynx is present which leads to a round pharynx, measuring 0.07 - 0.08 in diameter; the latter leads to a moderately long oesophagus measuring 0.035 - 0.070 long. The oesophagus passes into the bifurcated intestinal caeca which extend laterally and terminate very close to the posterior extremity of the body.

The round ventral sucker lies at the end of the first third of the body and is 0.13 - 0.16 long and 0.12 wide. The oral sucker/ventral sucker ratio is 1.07: 1.

The two testes are elongated oval, located slightly posterior to the middle of the body. The right testis is 0.24 - 0.28 long and 0.17 - 0.21 wide while the left testis is 0.24 - 0.29 long and 0.14 - 0.17 wide. The seminal vesicle appears only in one specimen as a coiled, convoluted tube, extending postero-dorsal to acetabulum. The genital pore is pre-bifurcal.

The ovary is lobed, 0.21 - 0.26 long and 0.17 - 0.21 wide and is located between the two testes, being separated from the acetabulum by the uterus. The vitelline follicles extend in two lateral bands from the level of the pharynx anteriorly, to the posterior level of acetabulum. The uterus heavily occupies most of the post-acetabular region; it is full of eggs that measure 14-21 μm by 7-10 μm .

The gonotyle appears in the light microscope as a small structure associated with the ventral sucker, wider than long and seems in one specimen to bear two terminal spines while in the electron photomicrographs it appears in the form of a muscular, stalked and protruding spined structure (Fig. 3) whose apex bears a pair of prominent processes or spines.

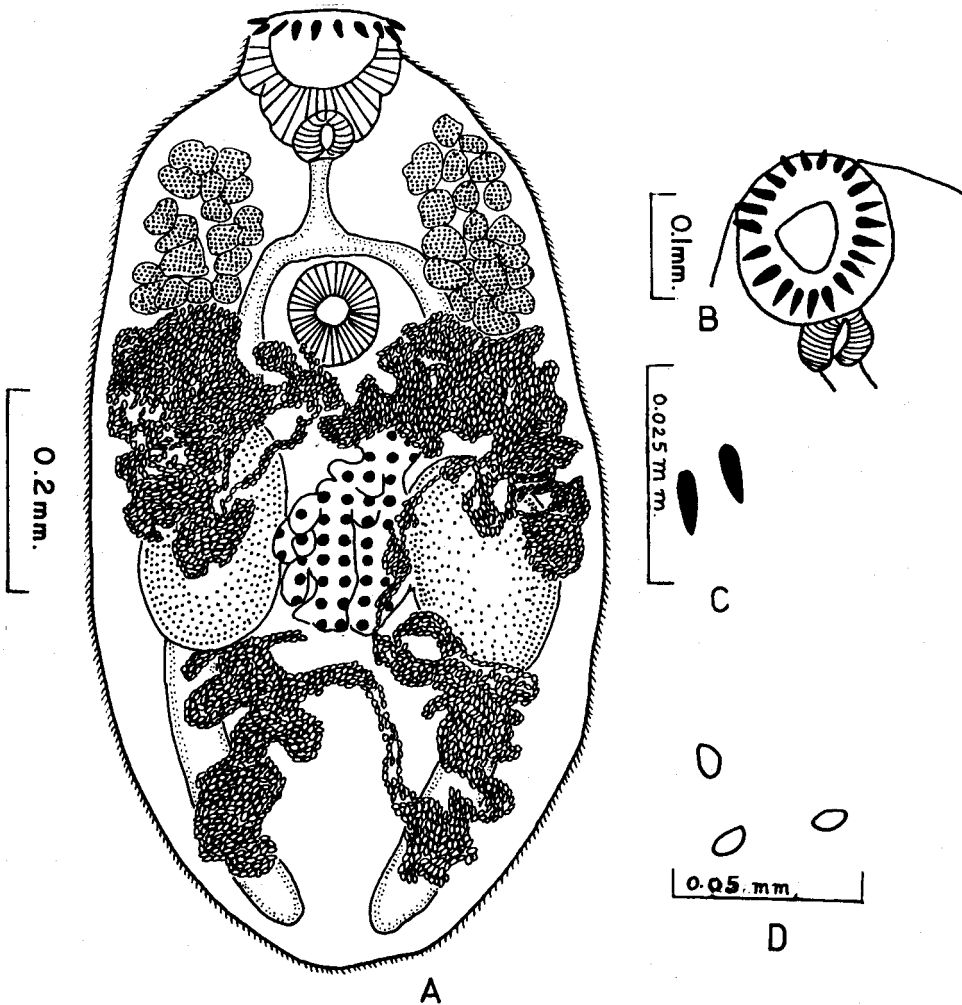


Fig. 1:

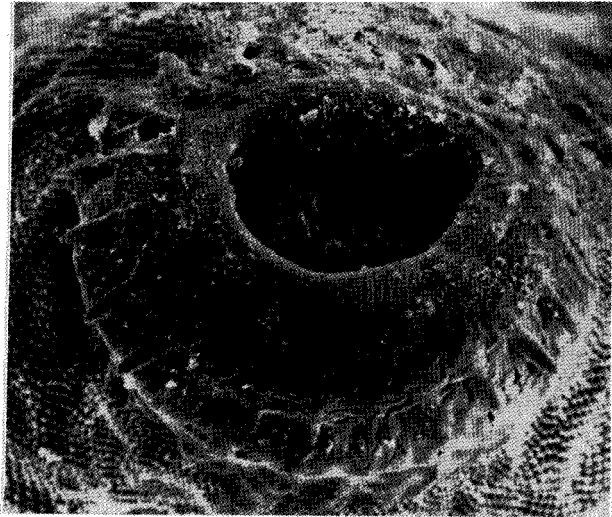


Fig. 2

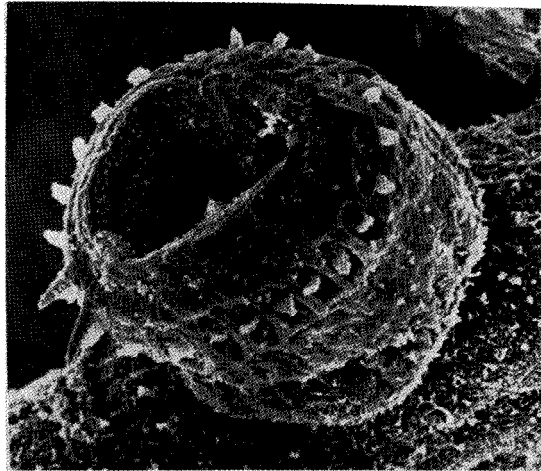


Fig. 3

DISCUSSION

The specimens under consideration belong to the genus *Allacanthochasmus* Van Cleave, 1922 because of the presence of the characteristic single crown of spines, the gonotyle associated with the ventral sucker, the lobed ovary and the vitellaria in the form of lateral bands extending from the pharynx to the acetabulum.

A. lutjani n.sp. agrees with *A. varius* in the shape of the body, the number, size and shape of oral sucker spines and the size of eggs. It differs from it, however, in the following respects:

1. The presence of a prepharynx.
2. A lobed ovary lying between the two testes, while in *A. varius* the ovary extends as a cross band between the two intestinal caeca anterior to testes.
3. Smaller, more rounded testes occupying an anterior position.
4. The vitellaria which extend as two lateral bands from the pharyngeal to acetabular level; in *A. varius* they surround the intestine and do not reach the level of intestinal bifurcation.
5. The uterine coils which extend from the level of acetabulum to the posterior end; in *A. varius*, they are confluent in the posterior region of the body.
6. A ventral sucker at the end of the first third of the body; in *A. varius* it is at the middle of the body.

A. lutjani n.sp. agrees with *A. artus* Van Cleave and Mueller 1932 in the number of oral spines, having a prepharynx, the shape of oral sucker and the size of the eggs. The new species differs from *A. artus* in having:

1. A more elongated body than *A. artus*.
2. Unbent oral spines.
3. A lobed ovary, occupying a post-testicular position.
4. Smaller testes slightly posterior to the middle of the body.
5. Vitellaria in two lateral bands.
6. A larger ventral sucker which lies at the first third of the body.
7. A dense uterus which occupies most of the post-acetabular zone.
8. A muscular gonotyle, associated with the ventral sucker, being cylindrical with five root-like processes at its apex in *A. artus* while in *A. varius* it is in the form of a simple crescentic prominence without lobes but in *A. lutjani* n. sp. there are two spines at the apex.

In the opinion of the present writers, the above differences are sufficient to designate *A. lutjani* as a new species.

Specific Diagnosis

The body is oval, spined, measures 1.02 - 1.20 long and 0.51 - 0.71 wide. Oral sucker cone-shaped, 0.14 - 0.19 long and 0.17 - 0.18 wide. The mouth is surrounded by a crown of 22 - 26 spines. There is a short prepharynx, which leads to the round

pharynx, measuring 0.07 - 0.08 in diameter, then a long oesophagus, 0.03 - 0.07 in length. The bifurcated caeca terminate very close to the posterior extremity. The ventral sucker is located at the end of first third of the body; it is slightly smaller than the oral sucker, measures 0.13 - 0.16 long and 0.12 wide. A gonotyle is associated with the ventral sucker as a muscular, stalked structure, with its apex bearing a pair of processes or spines. The ovary is in the form of lobed band which is located between the two testes; measures 0.21 - 0.26 long and 0.17 - 0.21 wide. The two testes are elongated oval, located slightly posterior to the middle of the body; the right testis measures 0.24 - 0.28 long and 0.17 - 0.21 wide while the left testis measures 0.24 - 0.29 long and 0.14 - 0.17 wide. Seminal vesicle is a convoluted tube, postero-dorsal to acetabulum. Vitellaria in two lateral bands, from the pharyngeal to acetabular levels. Uterus with many coils and eggs measure 14-21 μm \times 7-10 μm .

Host : *Lutjanus fulviflamma*

Location: Stomach and Intestine

Locality : Arabian Gulf

Type : Holotype deposited in the Helminthological Collection, Faculty of Science, University of Qatar. Paratypes deposited in the Helminthological Collection of the Department of Zoology, Faculty of Science, Ain Shams University and International Institute of Parasitology.

A KEY FOR SPECIES OF THE GENUS *ALLACANTHOCHASMUS* VAN CLEAVE, 1922.

1. Body elongate or slender, circumoral spines with bent tips
A. *artus* Van Cleave and Mueller 1932.
Body oval, circumoral spines without bent tips 2
2. Prepharynx and oesophagus absent, gonotyle lacking processes
A. *varius* Van Cleave, 1922.
Prepharynx and oesophagus present, gonotyle with two processes
A. *lutjani* n. sp.

METADENA LEILAE NAGATY, 1957

(Figs. 4,5)

DESCRIPTION

The following re-description is based on 2 mature and 5 immature specimens collected from *Lutjanus fulviflamma*.

The body is ovoid and tegument spined. Spines measure 7-10 μm long. The body

measures 1.07 - 1.71 long and 0.45 - 0.94 in maximum width. The length/width ratio varies from 1.70 - 3.1.

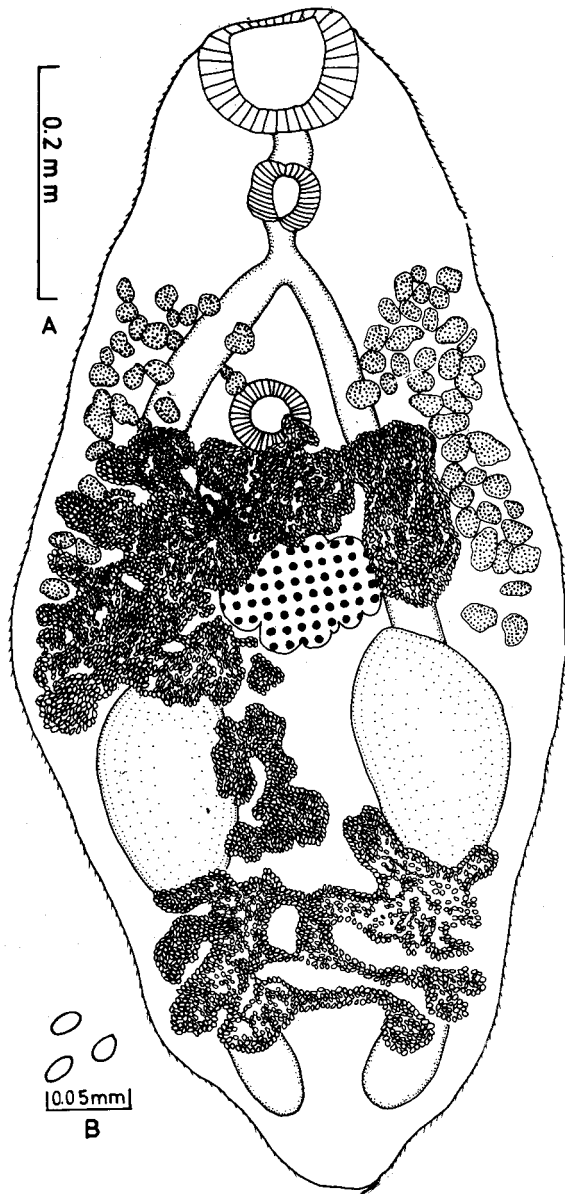


Fig. 4

The oral sucker is terminal, larger than acetabulum, round, measuring 0.14 - 0.21 long and 0.14 - 0.25 wide. The acetabulum lies at the end of first third of the body; it is round, measuring 0.09 - 0.12 in diameter. The ratio of oral sucker to ventral sucker is 1.4-2: 1. The prepharynx measures 0.01 - 0.08 in length. The pharynx is well developed, round, measuring 0.08 - 0.14 in diameter. The oesophagus is short;

in some specimens it is almost equal to the prepharynx and measures 0.03 - 0.08 long. The intestinal caeca are simple, ending blindly near the posterior extremity.

The two testes are symmetrical, oval and smooth; the right testis measures 0.26 - 0.42 long and 0.17 - 0.23 wide, while the left testis measures 0.21 - 0.42 long and 0.14 - 0.23 wide. The seminal vesicle lies posterior and to the left side of the acetabulum. The genital pore is median, located immediately in front of the acetabulum.

The ovary lies at the middle of the body, anterior to testes, consists of 12 - 13 lobes and measures 0.10 - 0.23 long and 0.12 - 0.28 wide. The seminal receptacle could not be clearly traced because of the many coiled limbs of uterus which occupies the greater part of the body. The uterus extends posteriorly to the end of the body and reaches anteriorly to the acetabulum. Eggs are oval, measuring 17-21 μm by 10-14 μm . The vitellaria consist of numerous follicles extending anteriorly from the intestinal bifurcation, mostly lateral to the caeca, reaching posteriorly to the anterior level of testes.

The excretory vesicle in living specimens is a Y - shaped structure which bifurcates posterior of the ovary while the anterior limbs reach the level of the pharynx (Fig. 5).

DISCUSSION

Our specimens closely resemble *Metadena leilae* Nagaty, 1957 in body shape, position of ovary and testes, number of ovarian lobes, structure and distribution of vitellaria and size of eggs. However, they differ from *M. leilae* in the absence of bowed shoulders of the intestinal bifurcation and the presence of a prepharynx.

M. leilae was described by Nagaty (1957). Manter (1963) transferred *M. leilae* to the genus *Paracryptogonimus* Yamaguti, 1934, assuming that the crown of oral spines characteristic of the genus *Paracryptogonimus* might have been lost in dead specimens collected by Nagaty before fixation. However, Ramadan (1979) did not accept Manter's view since *Metadena* could be separated from *Paracryptogonimus* by the presence of numerous dermal gland cells in the anterior part of the body and

by the extension and topography of vitellaria. Accordingly, Ramadan retained *M. leilae* Nagaty, 1957 in the genus *Metadena* and suggested that *Paracryptogonimus rostratus* Nagaty and Aal, 1961 should be transferred to the genus *Metadena* and thus named *M. rostratus* (Nagaty and Abdel Aal, 1961, Ramadan, 1979).

The present writers agree with Ramadan's view that *M. leilae* may be retained in the genus *Metadena* because of the similarities of the present material with Nagaty's species and noticing the absence of the crown of oral spines in living specimens during the present investigation.

In the original description, *M. leilae* Nagaty, 1957 was described as having bowed shoulders reaching to the level of pharynx. It is the view of the present writers that *M. leilae* lacks such shoulders of the intestinal furca but the presence of the excretory arms at the same position gives a false impression of caecal bows (Fig. 5).

M. crussulata Linton, 1910 is different from *M. leilae* in the more elongated body, more posterior testes, the separated vitelline fields and in fewer ovarian lobes.

The present report represents the first record of the genus *Metadena* in the Arabian Gulf.

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الديدان الطفيلية في أسماك الخليج العربي :

(٤) نوع جديد من التريماتودات ثنائية العائل الاكانثوكازمس لوتيانى وميتاديننا ليلي نجاتي ١٩٥٧ (فصيلة كريبتوجوتيميدي)

محمد فتحي عبد الفتاح سعود - مصطفى محمود رمضان
و كلثم سالم الكواري

يصف المؤلفون نوعاً جديداً من التريماتودات ثنائية العائل هو الأكانثوكازمس لوتيانى ، الذي يصيب الأسماك من نوع « النيسر » في المياه القطرية من الخليج العربي . ويتميز النوع الجديد بشكل ومكان المبيض بالإضافة إلى وجود مرء قصير وزائدتين واضحتين على الممص التناسلي .

كما يسجل المؤلفون الديدان الطفيلية من نوع ميتاديننا ليلي نجاتي ١٩٥٧ وذلك لأول مرة خارج موطنها الأصلي في البحر الأحمر ، وبالإضافة إلى إعادة وصف تلك الطفيليات من نفس عائلها الأصلي ، فقد تمت مناقشة ومراجعة خصائصها النوعية .